Q.1

a. Draw block diagram /pin diagram of Raspberry-Pi/ Beagle board /**Arduino Uno board** interfacing with IR Sensor/Temperature Sensor/Camera.

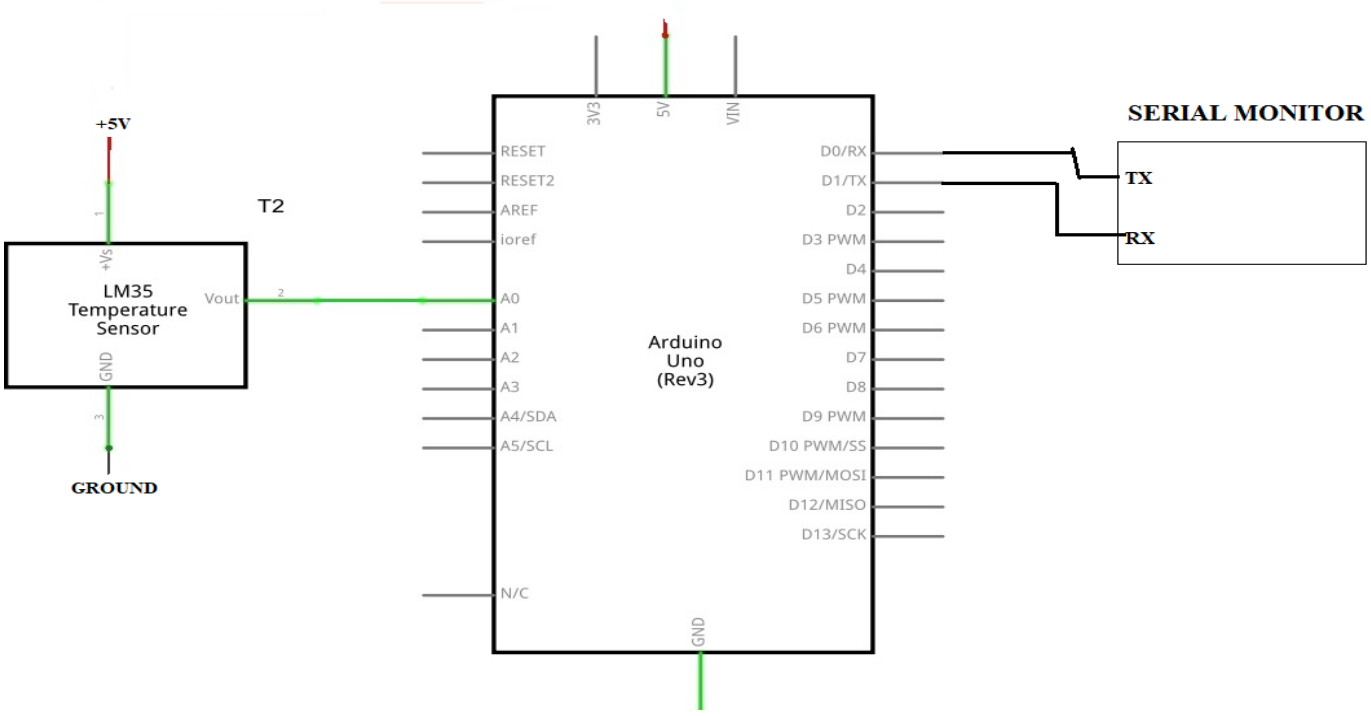
(Internal Examiner assign any one option for board and interface device and respective interface programming option)

b. WAP in python/C++ language to Blink LED.

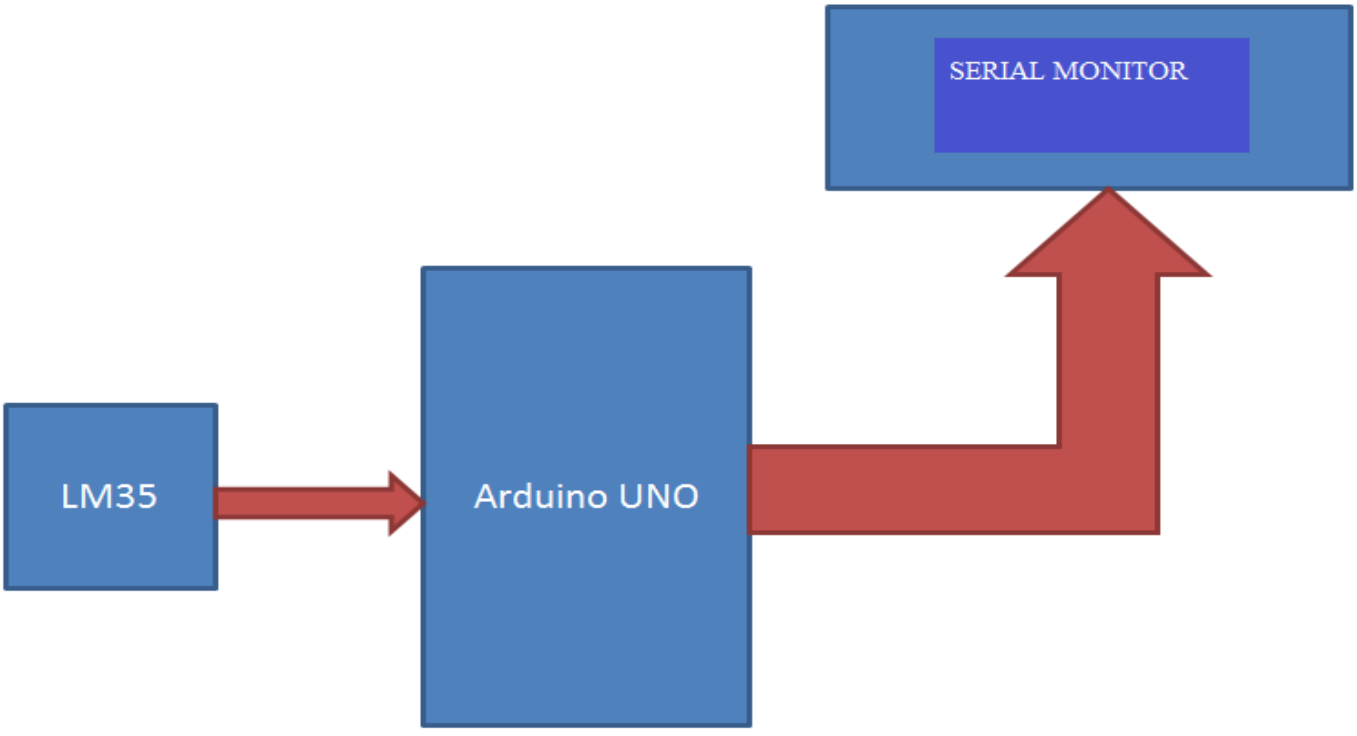
c. Write down the observations on Input and Output

d. Write down the Result and Conclusion

a. Ans:



Pin diagram of **Arduino Uno board** interfacing with Temperature Sensor



Draw block diagram **Arduino Uno board** interfacing with Temperature Sensor

TEMPERATURE SENSOR PROGRAM (not mentioned in slip but if asked by external then prepare below program)

Arduino Uno board interfacing with Temperature Sensor

```
const int lm35_pin = A1;  /* LM35 O/P pin */

void setup() {
  Serial.begin(9600);
}

void loop() {
  int temp_adc_val;
  float temp_val;
  temp_adc_val = analogRead(lm35_pin);  /* Read Temperature */
  temp_val = (temp_adc_val * 4.88); /* Convert adc value to equivalent voltage */
  temp_val = (temp_val/10); /* LM35 gives output of 10mv/°C */
  Serial.print("Temperature = ");
  Serial.print(temp_val);
  Serial.print(" Degree Celsius\n");
  delay(1000);
}
```

b. Ans: Blink LED.

```
void setup()
{

  pinMode(13, OUTPUT); // initialize digital pin 13 as an output.
}



void loop()      // the loop function runs over and over again forever
{
  digitalWrite(13, HIGH);   // turn the LED on (HIGH is the voltage level)
  delay(1000);              // wait for a second
  digitalWrite(13, LOW);    // turn the LED off by making the voltage LOW
  delay(1000);              // wait for a second
}
```

c.Ans:

Observation:

1.LED is connected to pin no 13 which ON & Off after every 1000ms(1s).by varying delay we can change the On time & Off time of the LED.

2. High indicates ON and Low indicates OFF.

d.Result & conclusion:

STUDENTS NEED TO WRITE CONCLUSION AND RESULT BY THEIR OWN.

Q.2

a. Draw block diagram /pin diagram of Raspberry-Pi/ Beagle board /Arduino Uno board interfacing with IR Sensor/Temperature Sensor/Camera.

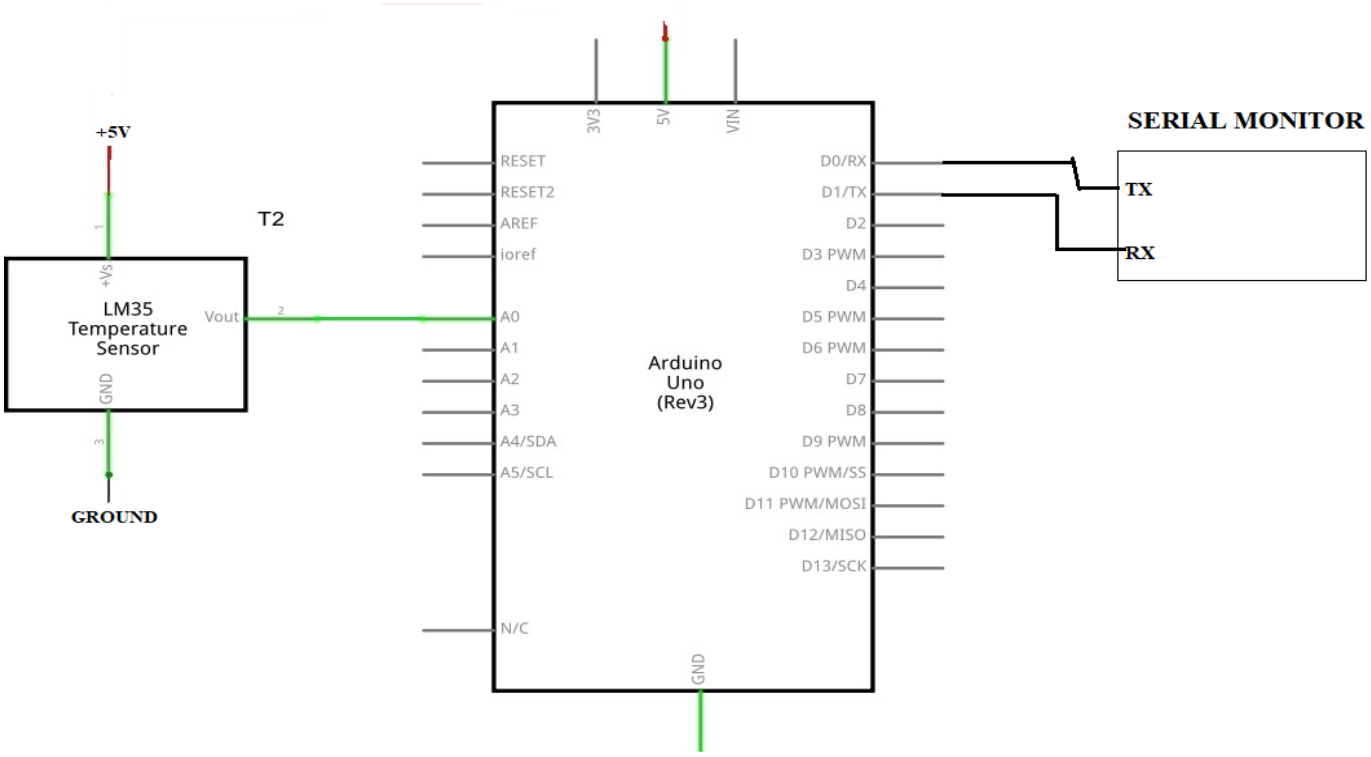
(Internal Examiner assign any one option for board and interface device and respective interface programming option)

b. WAP in python/C++ language to turn ON/OFF buzzer.

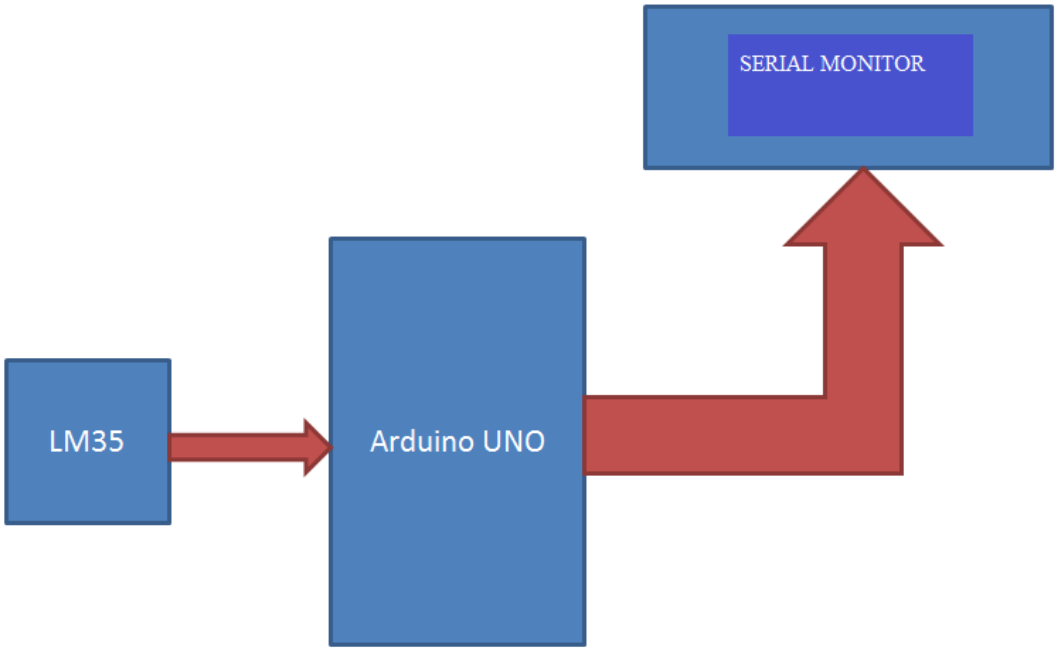
c. Write down the observations on Input and Output

d. Write down the Result and Conclusion

a.Ans:



Pin diagram of **Arduino Uno board** interfacing with Temperature Sensor



block diagram **Arduino Uno board** interfacing with Temperature Sensor

b. Ans:(LED and buzzer both programs are same)

```
void setup()
{

  pinMode(13, OUTPUT); // initialize digital pin 13 as an output.
}


void loop()      // the loop function runs over and over again forever
{
  digitalWrite(13, HIGH);   // turn the Buzzer on (HIGH is the voltage level)
  delay(1000);              // wait for a second
  digitalWrite(13, LOW);    // turn the Buzzer off by making the voltage LOW
  delay(1000);              // wait for a second
}
```

c.Ans:

Observation:

1.Buzzer is connected to pin no 13 which ON & Off after every 1000ms(1s).by varying delay we can change the On time & Off time of the Buzzer.

2. High indicates ON and Low indicates OFF.

d.Result & conclusion:

STUDENTS NEED TO WRITE CONCLUSION AND RESULT BY THERE OWN.

Q.3

a. Draw block diagram /pin diagram of Raspberry-Pi/ Beagle board /**Arduino Uno board** interfacing with IR Sensor/TemperatureSensor/Camera.

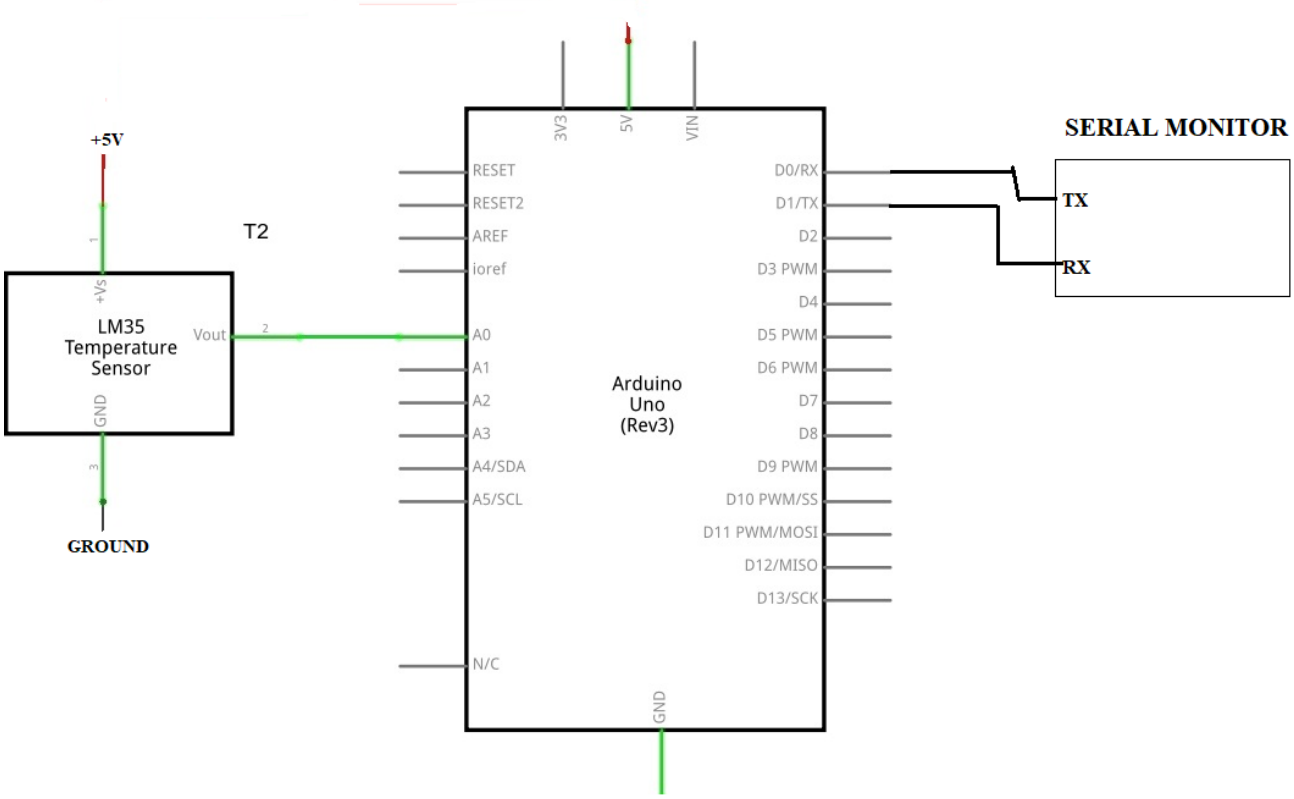
(Internal Examiner assign any one option for board and interface device and respective interface programming option)

b. WAP in python/C++ language to toggle two LED's.

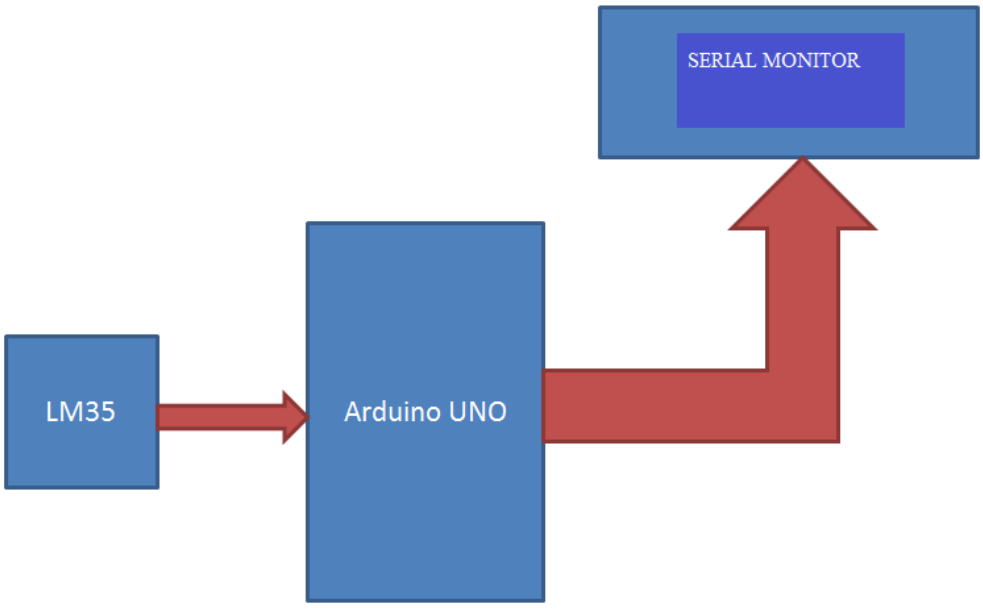
c. Write down the observations on Input and Output

d. Write down the Result and Conclusion

a.Ans:



Pin diagram of **Arduino Uno board** interfacing with Temperature Sensor



block diagram **Arduino Uno board** interfacing with Temperature Sensor

b.Ans:

```
void setup ()
{
pinMode ( 13, OUTPUT); // to set the OUTPUT mode of pin number 13 or connect one LED to pin 13
pinMode ( 7, OUTPUT);  // to set the OUTPUT mode of pin number 7.or connect one LED to pin 7

}
void loop ()
{
digitalWrite (13, HIGH);
digitalWrite (7, LOW);
delay(1500);  // 1.5 second = 1.5 x 1000 milliseconds
digitalWrite (13, LOW);
digitalWrite (7, HIGH);
delay(1000);  // 1 second = 1 x 1000 milliseconds
}
```

c.Ans:

Observation:

Toggles 2 LED's by connecting it to Pin 13 & Pin 7.

1. For 1500ms(1.5s) one LED1 is ON and LED2 is OFF.
2. After 1.5sec. LED 2 becomes ON and LED 1 OFF.
3. We can change the time of ON & OFF by changing the delay value.

d.Result & conclusion:

STUDENTS NEED TO WRITE CONCLUSION AND RESULT BY THEIR OWN.